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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 20040531

Application Number: 09/347,525
Filing Date: July 06, 1999
Appellant(s): OKU ET AL.

James A. Oliff/Seth S. Kim
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 18, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct[1].

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims in the following seven groups: I: claim 1; II: claim 2; III: claim 3; IV: claim 4; V: claim 6; VI: claim 8; and VII: claims 13-15, do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

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[1] It is noted that appellants also include a summary of the applied references (pp. 5-8) within the Summary of Invention section of their brief. It should be noted for the record however that this summary of the references, particularly Deist, is incomplete and could be misleading if relied upon alone. Although the examiner's position with respect to the relevant teachings of the references will be fully set forth within the statement of rejection to follow, it must be pointed out that Deist expressly indicates that *extruders* with controlled feed can be used (col. 7, lines 34-40) and further, a gradual blending transition between stocks is suggested (note numerous references to this e.g. col. 1, lines 11-23).

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

3,170,499	Deist	2-1965
2,849,049	Hanson	8-1958
6,039,826	Okada	3-2000[2]

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 6, 8 and 13-15 stand rejected under 35 U.S.C. 103(a) as obvious over Deist (US 3,170,499) taken alone or further in view of Hanson (US 2,849,049) and Okada (US 6,039,826).

Summary of the rejection:

The present claims essentially require continuous extrusion and winding of a rubber strip with gradual (or stepwise) changing of materials blended in the extruder to form different layers (esp. tread layers - claim 8). Deist likewise discloses forming a rubber laminate in a tire by winding a rubber strip, the strip initially including a first rubber material followed by a gradual blending with and eventual change to a second rubber material. Further, this material is applied to form at least three overlapping layers in a tire tread area - e.g. "A", "B", "C"; note also esp. cols. 1-2 and cols. 4-7, it being noted that this reference even contemplates forming one of the layers entirely from a blend of two other materials (e.g. col. 4, lines 69-72; col. 6, lines 33-36) much as appellant's second layer. Further,

[2] Filed April 16, 1998.

and most importantly, although this reference is principally directed to the use of mills and calenders, at col. 7, lines 34-40, **it is explicitly indicated that an extruder can be used in place of the mills/calenders, the feed to the extruder being controlled in the same way to adjust the compositions**. When read especially in light of the teaching to provide controlled feed through a plurality of hoppers (75-77 in fig. 2; compare appellant's hoppers 3a, 3b, 3c in fig. 1) each containing a different stock and being controlled to obtain the desired supply/strip composition, a methodology substantially as claimed is considered to be suggested. Continuous extrusion and winding of a strip with gradual change of materials is thus clearly suggested. The secondary references to Hanson and Ogawa were optionally added as further evidence of the conventional nature of overlapped edges in strip wound treads.

Complete statement of rejection:

Deist discloses a method of laminating band-shaped uncured rubber materials to form a laminated rubber member having a given sectional shape by winding a band-shaped (i.e. strip) uncured rubber material on a rotating support (i.e. a tire carcass - e.g. note col. 1, lines 11-23; col. 2, lines 65+), which comprises using two or more rubber compositions having different properties/characteristics after the curing (e.g. col. 2, lines 24-33). This includes forming a first rubber material as a first strip and winding the first band-shaped rubber member on the rotating support (i.e. tire) to form a first rubber layer (e.g. layer A); and then gradually adding a second material to create a blend of the first rubber material and the second rubber material with a gradually increasing blending ratio of the second rubber material to the first rubber material (e.g. col. 2, lines 24-53), this strip

being continuously wound to form additional layers of desired compositions, it being further noted that one of the rubber stocks/layers can be entirely formed as a blend if desired (col. 4, lines 69-72; col. 6, lines 33-36) consistent with the claimed second layer. As to the claimed requirement that the strip be extruded, although Deist is principally directed to the use of mills and calenders, at col. 7, lines 34-40, it is explicitly indicated that

> "One obvious variation which might be mentioned would be the utilization of extruder means in place of one or more of the mills and calender as referred to in the embodiments described wherein feed to the extruder means would be controlled as described with reference to feeding the mills and calender." (col. 7, lines 34-40)

Taking the second embodiment (fig. 2) of Deist for example, a blending mill is described to form the strip in which feed is through a plurality of hoppers (75-77; compare appellant's hoppers 3a, 3b, 3c in fig. 1) each containing a different stock and being controlled to obtain the desired supply/strip composition. Following the above noted suggestion to use extruders, the artisan would have replaced the mill with an extruder, feed being controlled with controlled hoppers as described. Deist is therefore considered to teach a method as claimed except that specifics of the winding process are not given and thus there is no explicit reference to "helical" winding and further there is no explicit suggestion that the strips have overlapped edges. Also, Deist does not expressly characterize the different stocks as differing in moduli after curing.

As to "helical winding", it is considered that the suggestion to build-up rubber portions of the tire by a strip winding process (e.g. col. 2, lines 65+; col. 4, lines 2+) would have been understood as implicitly and necessarily suggesting a "helical" winding process

since this is the only way a narrow strip can be wound to form complete tire compound layers. In any event, this further would certainly have been obvious for these same reasons, the references to Hanson (note this reference is referred to at col. 4, lines 15-18 of Deist) and Okada providing ample evidence to support this position.

As to the overlapping of edge portions of the bands, although Deist does not provide specifics of the strip winding process, it is submitted that it would have been readily apparent and therefore obvious to the ordinary artisan that the strip in Deist should be wound in overlapping form on the tire support, it being noted and considered that in strip winding of tire components such as treads, adjacent edges of successive windings are almost always typically overlapped (as is well known), overlapping adjacent edges being therefore considered obvious from the reference teachings. In other words, it is submitted that the ordinary artisan reading the Deist teachings would have appreciated that the strip would almost of necessity have to be wound in overlapping edge form to achieve any useful product, particularly with a diamond shaped band as preferred by Deist, the alternative (thin diamond edge to diamond edge?) being clearly unworkable for building any sort of useful tire product. Further, to back up the examiner's position in this regard that overlapped strip wound treads are well known, the references to Hanson and Okada were optionally added to this rejection, these references clearly evidencing the conventional nature of overlapped edges in strip wound treads (e.g. note fig. 5, col. 2, lines 45-51 and col. 5, lines 25-30 of Hanson and the figures of Okada; note also that the reference to Hanson is even referred to in the Deist patent as suggesting suitable conventional strip winding techniques - col. 4, lines 15-18).

As to the stocks differing in moduli, although Deist does not explicitly indicate that the rubber materials differ in "moduli" as claimed, the reference does clearly indicate that the materials have different properties/characteristics to meet the service requirements for each portion of the tire (e.g. col. 2, lines 24-33) and in fact "soft" and "stiff" rubbers are discussed at col. 1, lines 33-46. It therefore is considered to have been readily apparent or certainly obvious that such rubbers would or should differ in moduli as claimed in claims 1 and 6, it being additionally noted that it is extremely well known to the ordinary artisan that different tread parts (e.g. base/cap/cushion) typically and commonly have different moduli requirements - the particular degree of difference would have been readily and routinely optimized by the artisan for only expected results, it being noted that a meaningful stiffness variation (note stiffness mentioned at col. 1, lines 33-46 of Deist, it further being noted that modulus is one measure of such a property) for a material would have been expected to lead the artisan to a select materials having a certain minimum difference - otherwise there would be little reason to use different materials.

Deist is therefore considered to render a process as required by claim 1 obvious. As to claim 2, as already noted, Deist indicates that a third layer (e.g. "C") can be formed from a second one of the rubber stocks, this being atop another layer formed from a blend of the first and second stocks (e.g. col. 4, lines 69-72; col. 6, lines 33-36). With respect to claims 3 and 4, Deist indicates that it would be desirable to use many different rubber stocks each tailored for the specific location in the tire (col. 2, lines 11-17) and further that more than three stocks can be used if desired - col. 4, lines 72-75; col. 7, lines 3+. To form more layers whether pure or blended would thus have been obvious with the

expectation of better being able to tailor the stock properties to the mechanical requirements in that particular position in the tire - only the expected results would therefore be achieved in any particular selection of a desired number of layers and stocks. Claim 6 has been treated above. As to claim 8, Deist explicitly discloses the three mentioned layers for a tread (e.g. col. 4, lines 63-66). As to claims 13-15, overlapping edges in strip winding for any strip wound layer would have been obvious for the reasons already discussed above.

(11) Response to Argument

It is first argued (top of page 12) that "Deist specifically teaches away from the invention," apparently because the specific embodiments disclosed do not use extruders. This argument has been carefully considered but is unpersuasive since, as more fully noted in the statement of rejection, Deist specifically and unambiguously suggests the use of extruders (col. 7, lines 34-40).

Appellants' further urge that

> "[a]lthough Deist mentions using extruders, such is only mentioned in passing that extruder means may be used in place of one or more of the mills and calendar (see col. 7, lines 34-40). This throwaway passage only suggests a device similar to that shown in Fig. 1 of Deist. Namely, the passage suggests replacing the blending mills 40, 41, 42 and 10, and calendar 24 with extruders. Consequently, the passage in Deist merely suggests providing five separate extruders; one each for each of the mills 40, 41, 41 and 10 and calendar 24. Therefore, the suggestion in Deist regarding the extruder does not teach the invention which eliminates the need for mills or multiple extruders" (second paragraph on page 12 of appellants' brief).

First, although appellants have dismissed this as a "throwaway passage", it is considered to be a clear and unambiguous teaching to use extruders in place of previously described mills and calender "in the embodiments described," this clearly

indicating that extruder means can be used with any of the embodiments, not just fig. 1. Further, even if the ordinary artisan provided five extruders as a modification of fig. 1, the blending would still be occurring in the final extruder and it is not therefore seen how the present claims would define over this. Further, and most importantly, in adapting the second embodiment of Deist (fig. 2 - in which a single blending/calendaring device is used, the feed to the device consisting of controlled feed from a plurality of hoppers), to use of extruder means, the most logical and obvious adaptation of this embodiment would be to use a single extruding means with a controlled feed from a plurality of hoppers (such being considered in fact to be very similar to what is illustrated in appellants' fig. 1). Appellants' arguments on this point are thus unpersuasive.

It is then argued (third paragraph on page 12) that the inference that the mention of extruders is "merely a throwaway passage" is strengthened by Deist's references to blending mills and the mastication therein, it being concluded that

> "The two embodiments of Deist show that Deist limited his disclosure to a blending mill and did not contemplate extruders as a viable alternative to the blending mill.

This argument is unpersuasive as again, by its own explicit terms, Deist *did* contemplate extruders as a viable alternative. Further, extrusion is *extremely* well known and well characterized in forming tire compounds, it not being considered beyond the skill level of the ordinary artisan to suitably extrude a tire compound strip and nothing in Deist is considered to teach away from this.

Appellants further urge (paragraph spanning pages 12-13) that somehow because Hanson is referenced by Deist but not incorporated by reference, then this "raises an inference that Deist did not see extruders as a solution in his disclosure". It is further

similarly argued (second full paragraph on page 13) that since Hanson was earlier and commonly assigned Deist had access to it but "[d]espite all these opportunities to use an extruder in his disclosure, Deist moved away from using extruders and instead used mills and calendar. Therefore, Deist teaches away from using extruders and by extension, fails to suggest the invention." This argument is likewise unpersuasive as again Deist did *expressly* see extruders as an alternative solution and thus does not teach away from extruders.

It is also argued (first full paragraph on page 13) that the specifics of the knives, etc. would have to be scrapped if extruders were used "and yet Deist does not explain how extruders will work to replace the knives". While the specific knives, etc. would not be needed with extruders, the artisan is considered to be fully capable of forming strips using extruders - appellants' have even referenced the Hanson disclosure in this regard, this providing clear evidence that the ordinary artisan in this art understands how to extrusion form strips for strip winding of tire components.

With reference to the fig. 2 embodiment of Deist, it is argued (pages 14-15) that the reference is suggesting sequential feed where the feeds are only started after the previous feed is stopped and therefore that the fig. 2 embodiment does not have or desire a gradual or stepwise transition. This argument however is considered to be contradicted by clear and unambiguous teachings to the contrary - note for example col. 2, lines 41-46 and col. 6, line 70 - col. 7, line 16, it being further noted as well that the main objective of the reference is to achieve a gradual transition - note col. 1, lines 11-23; col. 2, lines 24-33 as well as the preamble of almost all the clams. Appellants' arguments to the contrary

therefore ignore and misconstrue explicit teachings in the reference and therefore are unconvincing. In fact, it should also be pointed out that even if appellants' argument were accurate, it does not seem that this would even define over what is presently claimed, it being noted that an abrupt change would still arguably seem to be a "stepwise" change.

Appellants also urge (middle page 15) that Deist does not suggest helical winding or overlapping edges. Helical winding with overlap is however considered to have been obvious over Deist alone or further in view of Hanson and Okada for reasons amply advanced in the statement of rejection, reference being made thereto. Appellant's have not shown any error in this position.

The arguments with reference to claims 2-4 (page 16-18) urge that Deist lacks sufficient teaching of how a strip should be wound to meet these claims - again, however, for reasons amply stated in the grounds of rejection, it is considered that Deist alone or further in view of Hanson and Okada renders these claims (and overlap winding, etc.) obvious, it being further stressed that Deist clearly and unambiguously would suggest continuous formation of a strip to form different components, the specific numbers and types of materials/blends used being readily selectable by the artisan to yield desired and expected results particularly given the indication in Deist that varying numbers of base stocks can be used alone or in blends to create even more stocks (col. 4, lines 69-75; col. 6, lines 33-36; col. 7, lines 3+).

As to claim 6, again, although it is agreed that modulus is not explicitly mentioned, the reference does clearly indicate that the materials have different properties/characteristics to meet the service requirements for each portion of the tire (e.g.

col. 2, lines 24-33) and in fact "soft" and "stiff" rubbers are discussed at col. 1, lines 33-46. It therefore is considered to have been readily apparent or certainly obvious that such rubbers would or should differ in moduli as claimed in claims 1 and 6, it being additionally noted that it is extremely well known to the ordinary artisan that different tread parts (e.g. base/cap/cushion) typically and commonly have different moduli requirements and appellants have not argued or shown that they have selected material properties beyond what would have represented such well known selections. In any event, the particular degree of difference would have been readily and routinely optimized by the artisan for only expected results, it being noted for example that a meaningful stiffness (a well known property for tire materials characterized often by modulus and even referred in col. 1 of Deist) variation for a material would have been expected to lead the artisan to select materials having a certain minimum difference - otherwise there would be little reason to use different materials.

The arguments with respect to claim 8 are unconvincing in light of the explicit teachings in Deist as noted in the statement of rejection above. The arguments with respect to claims 13-15 are likewise unpersuasive for reasons amply set forth in the statement of rejection with respect to strip overlap.

The arguments at pages 21-33 specifically referring to Hanson and Okada have been also considered but are unpersuasive. While these references do not show specifics of the claimed continuous extrusion with gradually changing blending ratio, this teaching is provided by Deist. Hanson and Okada were optionally added merely to back up the examiner's position that overlapped strip wound treads are well known, these references

clearly evidencing the conventional nature of overlapped edges in strip wound treads (e.g. note fig. 5, col. 2, lines 45-51 and col. 5, lines 25-30 of Hanson and the figures (esp. 5-6) of Okada; note also that the reference to Hanson is even referred to in the Deist patent as suggesting suitable conventional strip winding techniques - col. 4, lines 15-18). It should additionally be noted that although it is argued that Hanson and Okada "fail[s] to show overlapping at least widthwise edge portions of the wound rubber members with each other to form a first rubber layer", this is inaccurate since both of these references clearly show overlapping in all layers.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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June 1, 2004

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